June 3, 1930. A. W. CAPS 1,761,464

PAPER ROLL HOLDER

Filed June 26, 1925

Fig. 1.

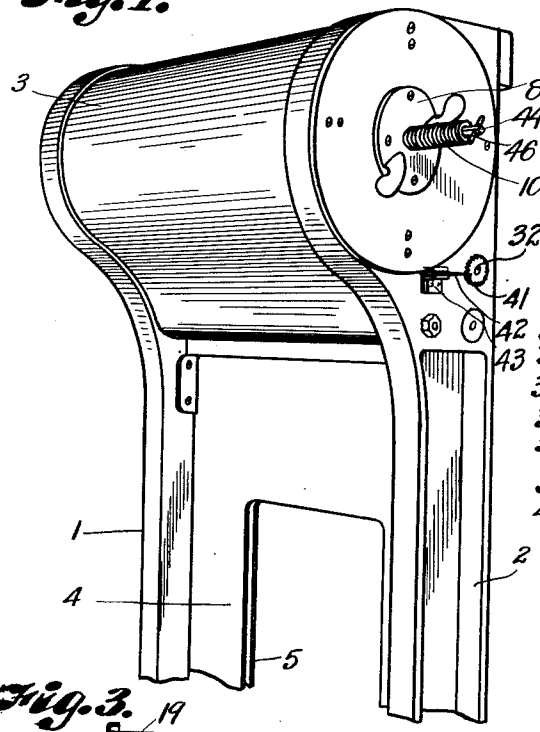


Fig. 2.

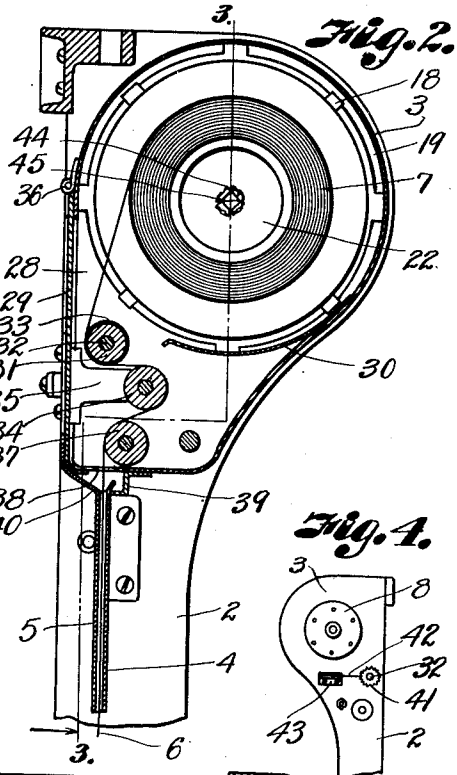
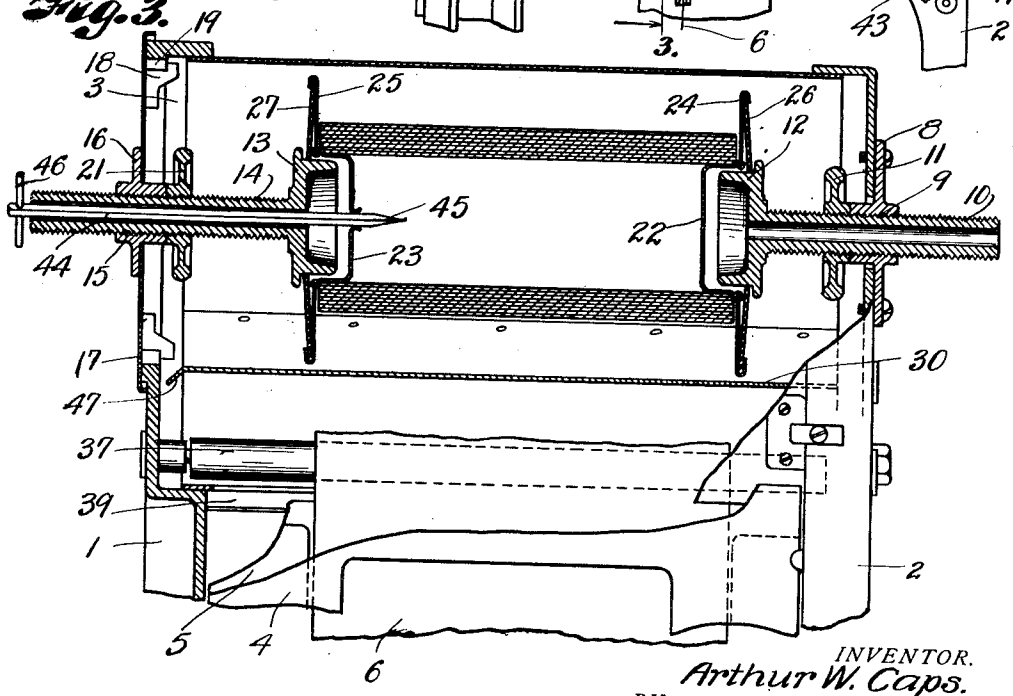


Fig. 4.

Fig. 3.



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UNITED STATES PATENT OFFICE

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PAPER-ROLL HOLDER

Application filed June 26, 1925. Serial No. 39,751.

This invention relates to roll holders for flexible material, and particularly to a paper roll holder in which a roll of photographically sensitized paper or other flexible material may be placed.

There is a class of photographic copying machines which employ rolls of sensitized paper adapted to be exposed to a projecting apparatus so that the object to be photographed may be projected upon the paper. Such machines carry paper roll holders in which shafts or spindles are located to receive the paper roll so that the paper roll can be unwound as the paper is fed through the photographic copying machine. My invention contemplates a novel device for holding and feeding the paper to the mask surrounding the zone of exposure and it contemplates a novel form of light-tight box, adjustable roll supporting hubs, and an attachment for effecting re-winding of the roll, the hubs being so disposed that they are adapted to be adjusted one toward the other to provide for rolls carrying paper of different widths. As a safeguard the invention also contemplates the inclusion of an indicator to indicate when the paper is on the roll and when it has been entirely fed off the roll.

The novel details of construction will be clearly understood by reference to the following description in connection with the accompanying drawings, in which

Fig. 1 is a perspective view of the roll holder or box constructed in accordance with my invention.

Fig. 2 is a longitudinal sectional view through the same.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2, and

Fig. 4 is a detail view showing the indicator.

Referring now to the drawings by numerals of reference, 1 and 2 designate two standards which support the paper roll holder 3. The standards also constitute supports for the two panels 4 and 5 of a mask, the panels being spaced apart a sufficient distance to permit the paper 6 to be fed between them. The paper is wound in a roll indicated at 7, and according to my invention it is adequately supported by a novel form of apparatus which I will now proceed to describe.

In one end of the box or casing is a plate 8 provided with an internally threaded collar 9 engaged by the threads of a hollow shaft 10 projecting through one end wall of the casing or housing 3 and held in adjusted position by a jam nut 11. On the inner end of the threaded shaft 10 is a hub 12 in line with but spaced from a complementary hub 13 on the inner end of a threaded shaft 14, the threads of which engage the threads of a collar 15 on the end plate 16 carried by the removable end wall 17. The removable end wall 17 differs from the end wall on which the plate 8 is secured, by the fact that it has a plurality of notched projections or fingers 18 adapted to engage cam projections 19 about the opening 20 so that when the end wall is put into place and given a partial turn, the members 18 will ride upon the cam members 19 and lock the end wall 17 securely to the paper holder or box 3.

The threaded shaft 14 is provided with a jam nut 21 similar to the nut 11 on shaft 10. The roll 7 of paper has within it two metal arbors or bosses designated 22 and 23. The arbors carry peripheral flanges 24 and 25. The outer faces of the flanges 24 and 25 are provided with cardboard facing disks 26 and 27. The arbors or bosses, the flanges and the covering faces are all of conventional construction, specifically not forming part of my invention. The bosses or arbors, however, receive the hubs 12 and 13.

The paper is unwound from the roll and passes through the space 28 between the door 29 of the casing and the arcuate plate 30 in the housing below the roll. The paper passes around a roller 31 on a shaft 32 mounted in the sides of the housing or paper box. This roller is preferably covered with felt or similar friction material 33 so that it will rotate as the paper passes over it. The paper passes over an intermediate roller 34 in the bracket arms 35 carried by the door 29 which is hinged at 36 and which is held closed by suitable clasps or fastening device. After the paper passes over the roller 34 it

passes over an idler roller 37 above the space between the two members 4 and 5 of the mask so that the paper can be fed downwardly between the two members 4 and 5 in a convenient manner. In order that the paper may pass from the box to the mask I provide an opening 38 in the bottom of the box or casing. On one side of the opening 38 and slightly below it is a Z-shaped baffle 39 so that light from the lens of the projecting apparatus will not penetrate to the paper, and on the opposite side is a baffle wall 40 to protect the paper against the light. Therefore the casing is made light-proof, the only light thrown on the paper being that which penetrates to the space surrounded by the edges of the mask members 4 and 5.

By providing the roller 34 in brackets on the door 29, the door may be swung on its hinge or hinges to assist in threading the paper through the space between the rollers, thus facilitating the introduction of the paper in the proper position to feed to the mechanism below the mask, and it might be well to state here that the mask member 4 in practice is usually supported on a bottom hinge so that it can be pulled away from the mask 5 when the paper is being introduced, but as the particular construction of the mask constitutes no part of this invention I have deemed it unnecessary to specifically refer to its mechanical construction.

The shaft 32 projects beyond one end of the casing and it carries a ratchet wheel 41 which is engaged by a spring pawl or finger 42 anchored at one end to a bracket 43 so that as the paper is fed through the machine the frictional covering 33 of the roller 31 will be engaged by the paper so that the roller 31 will be rotated, rotating the ratchet 41. As long as the ratchet rotates it will produce a clicking noise due to the fact that the spring finger 34 rides over its teeth, so the operator will know that there is paper in the paper box; but when the paper has been paid out so that there is no more paper on the roll, the roller 31 will cease to rotate, consequently the ratchet will not rotate and since the ratchet does not rotate, the clicking noise will cease, so that the operator will know that it is time to put in a new roll.

It will be apparent that the hubs can be adjusted one toward the other to provide for rolls of different lengths, and that the bosses or arbors will fit tight enough inside the rolls to bind so that they rotate with the rolls. Sometimes it becomes necessary to re-wind the roll or paper because a larger or smaller exposure is to be made. Then the operator uses a rewinding tool comprising an elongated spike or rod 44 having a sharpened end 45, the rod or spike being of sufficient length to pass through the hollow shaft 14 so that the point 45 can penetrate the metallic boss or arbor 23, and it will make a rectangular hole since the rod 44 is rectangular in cross section, so the operator need only turn the handle 46 to cause the roll to turn in paper winding position. Then the operator may place a cover or wrapper around the roll or paste the end of the roll down upon the roll proper, preparatory to removing it. Before it is removed, the end plate 17 will be removed to cause the hub 13 to move out of the arbor 23, permitting the end of the roll 7 to drop down upon the guide and baffle plate 30 extending across the box and having very slight clearance with respect to the flanges 24 and 25. It is to be understood, of course, that the hub 12 will remain rigid but the roll may be disengaged therefrom and slid along the plate 30. One edge of the plate 30 is flared as at 47 so that upon introducing a new roll the flange 24 or the cover 26 will not bind against the edge of the plate, so the part 47 really constitutes a guide for guiding one end of the roll toward the hub 12, the position of the plate 30 being such that the arbor 22 will readily ride upon the hub 12.

It will be clear that the device can be readily assembled, that the hub may be adjusted for any width of paper, and that the rolls may be easily applied to the apparatus and as conveniently removed.

What I claim and desire to secure by Letters-Patent is:—

1. A paper roll holder, comprising a casing having a paper discharging opening, hollow shafts in the ends of the casing, hubs concentric with and on the ends of the shafts, and a roll end penetrating tool of non-circular shape insertable through at least one hollow shaft and a spool supported by the hubs and having a central wall adapted to be pierced by the tool for independent turning of the spool thereby.

2. In a photographic roll holder, the combination with a light tight casing having a paper discharging opening in one wall thereof, of a pair of tubular paper roll supports threaded for adjustment in the end walls of the casing, a paper spool mounted on the supports, the latter and the paper roll being provided, one with hub bearings and the other with recesses cooperating with the same to provide a positive adjustment of the bearing through the medium of the threaded supports, and a tool extending through one of the supports and adapted to cooperate with the spool to turn it on its bearings.

In testimony whereof I affix my signature.

ARTHUR W. CAPS.